

## Stressors vs CSAs

### Potential Relationship between Preliminary Conceptual Conservation Strategy Alternatives and Key Environmental Stressors affecting Covered Species

Conservation Strategy Alternative	Entrainment	Upstream Flow-Related	Delta In-Flow	Extent and Quality of Habitat	Fluctuating Salinity	Invasive species	Water Quality	Fish Harvest	Barrier Passage	Urban Development
CSA 1—Operations Modifications with Existing Conveyance Configuration	Removal, consolidation, and screening of diversions  Facility and salvage improvements  Re-operation of pumps to reduce entrainment	Reoperation of upstream storage facilities to improve flow-related habitat conditions for key riverine species	Reoperation of upstream storage facilities to improve Delta in-flows for benefit of key species	Limited opportunistic restoration of in-channel habitats for key aquatic species in the Delta	Not addressed.	Not addressed.	Not addressed.	Not addressed.	Not addressed.	Not addressed.
CSA 2—In-Delta Habitat Restoration under Existing Operations	Not addressed.	Not addressed.	Not addressed.	Substantial increase in floodplain habitat extent and quality in northern and eastern Delta for key species	Not addressed.	Adverse effects of invasive species on key aquatic species could be lessened with habitat improvements	Conversion of farmland to habitat would reduce loadings of agricultural-related chemicals discharged from islands into the Delta	Not addressed.	Not addressed.	Conversion of farmland to habitat would preclude future urban development on those lands

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CSA 3— Opportunistic Exports with In-Delta Habitat Restoration	Reduction in entrainment of key species by limiting pumping to high flow periods  Reoperation of DCC to reduce entrainment of key fish species into the central and south Delta	Possible benefits if limiting pumping to high flow periods provides flexibility to provide for reoperation of upstream storage facilities to improve flow-related habitat conditions for key riverine species	Provides for more natural Delta in-flow conditions	Substantial increase in floodplain habitat extent and quality primarily in northern and eastern Delta for key species	Limiting pumping to high flow periods will allow for fluctuating salinity conditions during lower flow periods	Adverse effects of invasive species on key aquatic species could be lessened with habitat improvements  Restoration of fluctuating salinity could reduce the extent and quality of habitats for invasive predator and competitor species	Conversion of farmland to habitat would reduce loadings of agricultural-related chemicals discharged from islands into the Delta	Not addressed.	Not addressed.	Conversion of farmland to habitat would preclude future urban development on those lands

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CSA 4—South Delta Aqueduct (SDA) with In-Delta Habitat Restoration	Not addressed.	Reoperation of upstream storage facilities to benefit Delta in-flow may improve flow-related habitat conditions for key riverine species	Reoperation of upstream storage facilities to improve Delta in-flows for benefit of key species	Substantial increase in floodplain habitat extent and quality primarily in northern and eastern Delta for key species  Improved water quality conditions for key species in lower San Joaquin River and South Delta	Eliminating north-south in-Delta conveyance to pumps will provide for fluctuating salinity conditions in northern and western Delta; south Delta would be maintained as stable freshwater	Adverse effects of invasive species on key aquatic species could be lessened with habitat improvements  Restoration of fluctuating salinity could reduce the extent and quality of habitats for invasive predator and competitor species in northern and western Delta	Conversion of farmland to habitat would reduce loadings of agricultural-related chemicals discharged from islands into the Delta	Not addressed.	Not addressed.	Conversion of farmland to habitat would preclude future urban development on those lands

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CSA 5— Isolated Facility (IF) with In-Delta Habitat Restoration	Isolation of pumps provides maximum reduction of entrainment in South Delta	Reoperation of upstream storage facilities to benefit Delta in-flow may improve flow-related habitat conditions for key riverine species	Reoperation of upstream storage facilities to improve Delta in-flows for benefit of key species	Substantial increase in floodplain habitat extent and quality throughout Delta for key species	Provides for restoration of historical patterns of fluctuating salinity throughout the Delta	Adverse effects of invasive species on key aquatic species could be lessened with habitat improvements  Restoration of fluctuating salinity could reduce the extent and quality of habitats for invasive predator and competitor species in northern and western Delta  Isolation of pumps will reduce exposure of key species to predation in south Delta	Conversion of farmland to habitat would reduce loadings of agricultural-related chemicals discharged from islands into the Delta	Not addressed.	Not addressed.	Conversion of farmland to habitat would preclude future urban development on those lands

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CSA 6—Suisun Marsh Habitat Restoration in Combination with In-Delta Restoration	Not addressed.	Not addressed.	Not addressed.	<p>Substantial increase in floodplain habitat extent and quality in northern and eastern Delta, but of less magnitude than CSA-2, for key species</p> <p>Substantial increase in brackish habitats for key species in Suisun Marsh</p> <p>Improved diversity and distribution of estuarine habitats</p>	Not addressed.	Adverse effects of invasive species on key aquatic species could be lessened with habitat improvements	Conversion of farmland to habitat would reduce loadings of agricultural-related chemicals discharged from islands into the Delta, but of less magnitude than CSA-2	Not addressed.	Not addressed.	Conversion of farmland to habitat would preclude future urban development on those lands, but of less magnitude than CSA-2

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CSA 7— Upstream Habitat Restoration in Combination with In-Delta Restoration	Screening of river diversions will reduce entrainment of salmonids and other riverine species	Reoperation of upstream storage facilities to improve flow-related habitat conditions for key riverine species	Not addressed, but operations to improve riverine flow conditions could improve Delta in-flow conditions for key species	Substantial increase in floodplain habitat extent and quality in northern and eastern Delta, but of less magnitude than CSA-2, for key species  Substantial increase in the extent and quality of spawning and rearing habitat conditions for salmonids and other riverine species	Not addressed.	Adverse effects of invasive species on key aquatic species could be lessened with habitat improvements	Conversion of farmland to habitat would reduce loadings of agricultural-related chemicals discharged from islands into the Delta, but of less magnitude than CSA-2	Not addressed.	Removal of barriers to upstream passage for salmonids and other riverine species would increase the extent of spawning and rearing habitat	Conversion of farmland to habitat would preclude future urban development on those lands, but of less magnitude than CSA-2

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<b>CSA 8— Bifurcated SDA with In-Delta Restoration</b>	Reduction of entrainment associated with partial isolation of pumps	Not addressed, but reoperation of upstream storage facilities to benefit Delta in-flow may improve flow-related habitat conditions for key riverine species	Reoperation of upstream storage facilities to improve Delta in-flows for benefit of key species	Substantial increase in floodplain habitat extent and quality primarily in northern and eastern Delta for key species  Improved water quality conditions for key species in lower San Joaquin River and South Delta, but less than CSA 4	Eliminating north-south flow to pumps will provide for fluctuating salinity conditions in northern and western Delta, benefits likely to be greater than under CSA 4	Adverse effects of invasive species on key aquatic species could be lessened with habitat improvements  Restoration of fluctuating salinity could reduce the extent and quality of habitats for invasive predator and competitor species in northern and western Delta	Conversion of farmland to habitat would reduce loadings of agricultural-related chemicals discharged from islands into the Delta	Not addressed.	Not addressed.	Conversion of farmland to habitat would preclude future urban development on those lands

**BDCP Conservation Strategy Subgroup  
Handout  
Working Draft CSA Effects on Stressors  
March 5, 2007**

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<b>CSA 9—Dual Conveyance with In-Delta Restoration</b>	Reduction of entrainment associated with curtailment of pumping during periods key species are vulnerable to entrainment	Not addressed, but reoperation of upstream storage facilities to benefit Delta in-flow may improve flow-related habitat conditions for key riverine species	Reoperation of upstream storage facilities to improve Delta in-flows for benefit of key species	Substantial increase in floodplain habitat extent and quality throughout Delta for key species	Provides for restoration of historical patterns of fluctuating salinity throughout the Delta	<p>Adverse effects of invasive species on key aquatic species could be lessened with habitat improvements</p> <p>Restoration of fluctuating salinity could reduce the extent and quality of habitats for invasive predator/competitor species in northern and western Delta</p> <p>Reduction in exports during periods key species are vulnerable could reduce exposure of key species to predation in south Delta</p>	Conversion of farmland to habitat would reduce loadings of agricultural-related chemicals discharged from islands into the Delta	Not addressed.	Not addressed.	Conversion of farmland to habitat would preclude future urban development on those lands